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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,277	09/19/2003	C. Christopher Klepper		8651

7590 06/07/2006

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EXAMINER

PERKINS, PAMELA E

ART UNIT	PAPER NUMBER
2822	

DATE MAILED: 06/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary	Application No.	Applicant(s)	
	10/667,277	KLEPPER ET AL.	
	Examiner	Art Unit	
	Pamela E. Perkins	2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30, 32-36, 38 and 40-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3, 6-8, 10-27, 30, 32, 35, 36, 38 and 40-45 is/are allowed.
- 6) ☒ Claim(s) 4, 5, 9, 28, 33 and 34 is/are rejected.
- 7) ☒ Claim(s) 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/5/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action is in response to the filing of the after final amendment on 5 May 2006. Claims 1-30, 32-36, 38 and 40-45 are pending; claims 31, 37, 39 and 46-48 have been cancelled.

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 4, 5, 9, 28 and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Leung (5,558,718) ("Leung '718").

Referring to claim 4, Leung '718 discloses a method of ion implantation doping in a vacuum wherein plasma is involved in virtually 100% ionized pure boron plasma, meaning no other ionized atom species and no other non-ionized gas atoms in the plasma source (col. 3, lines 6-18; col. 4, lines 51-58; col. 4, line 66 thru col. 5, line 9).

Referring to claim 5, Leung '718 further discloses wherein the boron ions and ions of other atomic species have organized in a boron compound electrode (col. 5, lines 22-28).

Referring to claim 9, Leung '718 also discloses the total ion arrival rate or ion implantation rate, expressed as a total electric current impinging on the target material, is 1 amp (col. 9, lines 16-25).

Referring to claim 28, Leung '718 discloses wherein every process including steps of providing for generation of plasma and streaming of boron ions to the target are conducted with all components in a vacuum (col. 9, line 47 thru col. 10, line 11).

Referring to claim 33, Leung '718 further discloses implanting boron at doses normally used for p-doping due to the extraordinary damage rate associated with the high temperature rate (col. 1, lines 39-45; col. 4, line 66 thru col. 5, line 9).

Claims 33 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Leung (5,517,084) ("Leung '084").

Referring to claim 33, Leung '084 discloses a method of ion implantation of boron into semiconductor silicon in which the target is amorphized at boron doses normally used for p-doping due to the extraordinary damage rate associated with the high temperature rate, wherein the method takes place in a vacuum (col. 3, lines 43-57).

Referring to claim 34, Leung '084 further discloses wherein the target may be deliberately heated to a desired temperature by the implantation process due to the extraordinary rate of heat deposition resulting from the high rate of ion deposition (col. 3, lines 49-57; col. 7, lines 48-57).

Allowable Subject Matter

Claim 29 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: referring to claim 29, prior art does not teach, suggest or disclose wherein the vacuum precludes deliberate introduction any non-solid matter other than the plasma and ions originating in the solid electrode.

Claims 1-3, 6-8, 10-27, 30, 32, 35, 36, 38, and 40-45 are allowed.

The following is an examiner's statement of reasons for allowance: referring to claim 1, prior art does not anticipate, teach, or suggest a method of implanting boron ions into semiconductor materials at specified energies in the absence of a gas or vapor, where the ions or plasma originate directly from a solid boron material.

Response to Arguments

Applicant's arguments, see the after final amendment filed 5 May 32006, with respect to the rejection(s) of claim(s) 4, 5, 9, 28, 33 and 34 under 35 U.S.C. 102 (b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Leung '718 and Lueng '084.

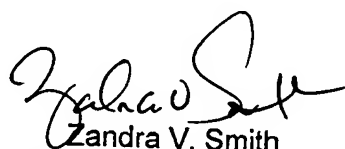
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pamela E. Perkins whose telephone number is (571) 272-1840. The examiner can normally be reached on Monday thru Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on (571) 272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PEP
30 May 2006


Zandra V. Smith
Supervisory Patent Examiner
30 May 2006